



MHF 3202 | Reasoning and Proof in Mathematics

Class Number: 11142

Instructor Information

Dr. John Streese

Course Details

Catalog Description: Fundamentals of logic, set theory, and proof techniques. Topics include propositional and predicate logic, set operations, functions, relations, mathematical induction, and proof strategies. Emphasis on analyzing, constructing, and writing rigorous mathematical arguments with clarity and precision.

Pre- and Co-Requisites: Prereq: MAC 2312 with a minimum grade of C.

Credit Hours: 3

Course Fees: \$0.00

Required Materials

BOOK OF PROOF

ISBN: 9780989472128

Authors: RICHARD HAMMACK

Publisher: HAMMACK

Edition: 3RD

Recommended Materials

How to Prove it

Subtitle: A Structured Approach

ISBN: 978-1-108-42418-9

Authors: Velleman

Publisher: Cambridge University Press

Publication Date: 2019

Edition: 3rd

Course Goals and Objectives

At the end of this course you should be able to:

Effectively communicate mathematical ideas.

Write a mathematical proof.

Know and understand basic ideas and applications of logic and proof techniques.

Expectations and Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- Define and Apply Fundamental Set Concepts: Clearly define and utilize fundamental concepts related to sets, including operations, set theory, and Venn diagrams.
- Construct and Interpret Logical Structures: Accurately construct and interpret truth tables and symbolic logic statements, translating between English and symbolic forms.
- Develop and Present Mathematical Proofs: Employ various proof techniques—such as direct proof, proof by contradiction, contrapositive proof, and mathematical induction—to construct valid mathematical arguments.
- Critically Evaluate Mathematical Arguments: Analyze and assess the validity and soundness of mathematical proofs and arguments presented by others.
- Communicate Mathematical Reasoning Effectively: Articulate mathematical ideas and proofs clearly and concisely in written form, adhering to proper mathematical notation and terminology.

Methods of Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Grading Scale

Letter grade and percentage

Letter	Percentage Value
A	90 - 100%
A -	87 - 89.99%
B +	84 - 86.99%
B	80 - 83.99%
B -	77 - 79.99%
C +	74 - 76.99%
C	67 - 73.99%
C -	64 - 66.99%
D +	60 - 63.99%
D	57 - 59.99%
D -	54 - 56.99%
E	53.99% and below

Course Schedule

Week 1 (June 29 - July 3)

Chapter 1: Sentential Logic

Chapter 2: Quantificational Logic.

Week 2 (July 6 - July 10)

Chapter 3: Proofs

HW 1 due July 6th

Week 3 (July 13 - July 17)

Chapter 4: Relations.

HW 2 due July 15th

Exam 1: July 16th Ch. 1 - 3

Week 4 (July 20 - July 24)

Chapter 5: Functions

Week 5 (July 27 - July 31)

Chapter 6: Mathematical Induction

HW 3 due July 27th

Week 6 (August 3 - August 7)

Chapter 8: Infinite Sets.

Exam 2: August 6th Ch. 4 - 6

HW 4 due August 7th

GRADES DUE: AUGUST 10th

University Policies and Resources

Information about grading policies, support for students with disabilities, course evaluations, the Honor Code, and other course policies and campus resources can be found on the [Syllabus Policies page](#).

Attendance Policy

Excused and Unexcused Absences

Students may only participate in classes if they are registered officially or approved to audit with evidence of having paid audit fees. The Office of the University Registrar provides official class rolls to instructors.

Students are responsible for satisfying all academic objectives as defined by the instructor. Absences count from the first-class meeting.

Acceptable reasons for absence from or failure to engage in class include illness; Title IX-related situations; serious accidents or emergencies affecting the student, their roommates, or their family; special curricular requirements (e.g., judging trips, field trips, professional conferences); military obligation; severe weather conditions that prevent class participation; religious holidays; participation in

official university activities (e.g., music performances, athletic competition, debate); and court-imposed legal obligations (e.g., jury duty or subpoena). Other reasons (e.g., a job interview or club activity) may be deemed acceptable if approved by the instructor.

For all planned absences, a student in a situation that allows an excused absence from a class, or any required class activity must inform the instructor as early as possible prior to the class. For all unplanned absences because of accidents or emergency situations, students should contact their instructor as soon as conditions permit.

Students shall be permitted a reasonable amount of time to make up the material or activities covered during absence from class or inability to engage in class activities because of the reasons outlined above.

If a student does not participate in at least one of the first two class meetings of a course or laboratory in which they are registered, and they have not contacted the department to indicate their intent, the student can be dropped from the course. Students must not assume that they will be dropped, however. The department will notify students if they have been dropped from a course or laboratory.

The university recognizes the right of the instructor to make attendance mandatory and require documentation for absences (except for religious holidays), missed work, or inability to fully engage in class. After due warning, an instructor can prohibit further attendance and subsequently assign a failing grade for excessive absences.

Religious Holidays Guidelines

At the University of Florida, students and faculty work together to allow students the opportunity to observe the holy days of their faith. A student should inform the faculty member of the religious observances of their faith that will conflict with class attendance, with tests or examinations, or with other class activities prior to the class or occurrence of that test or activity. The faculty member is then obligated to accommodate that particular student's religious observances. Because students represent a myriad of cultures and many faiths, the University of Florida is not able to assure that scheduled academic activities do not conflict with the holy days of all religious groups. Accordingly, individual students should make their need for an excused absence known in advance of the scheduled activities.

The Florida Board of Education and state law govern university policy regarding observance of religious holidays.

Guidelines

- Students, upon prior notification to their instructors, shall be excused from class or other scheduled academic activity to observe a religious holy day of their faith.
- Students shall be permitted a reasonable amount of time to make up the material or activities covered in their absence.
- Students shall not be penalized due to absence from class or other scheduled academic activity because of religious observances.

If a faculty member is informed of or is aware that a significant number of students are likely to be absent from class because of a religious observance, the faculty member should not schedule a major exam or other academic event at that time.

A student who is to be excused from class for a religious observance is not required to provide a second party certification of the reason for the absence. Furthermore, a student who believes that they have been unreasonably denied an education benefit due to religious beliefs or practices may seek redress through the student grievance procedure.

Absence due to Illness

A student who is absent from class or any required class-related activity because of illness should contact their instructor, if feasible, as early as possible prior to the missed class or activity.

Students shall be permitted a reasonable amount of time to make up the material or activities covered during an excused absence.

Students should contact their college by the deadline to drop a course for medical reasons. Students can petition the Dean of Students Office to drop a course for medical reasons. The university's policy regarding medical excuse from classes is maintained by the Student Health Care Center.

Twelve-Day Rule

Students who participate in university-sponsored athletic or scholarly activities are permitted to be absent 12 scholastic days per semester without penalty. A

scholastic day is any day on which regular class work is scheduled as defined in the approved university calendar. [More Info](#)

The student or student's advisor must notify the instructor as early as possible prior to the anticipated absence to allow ample time for accommodations. Instructors must be flexible and not penalize students when re-scheduling during-term and final exams, class assignments, and other required activities and must follow the UF Attendance Policy herein and UF Examination Policies. As noted in the UF Examination Policies, during-term exams should be re-scheduled no later than before the end of the semester, while final exams no later than 90 days after the originally scheduled exam time. However, instructors are encouraged to re-schedule final and during-term exams, assignments, and other activities as soon as possible after the last day of the absence and must not penalize the student in any way. [More Info](#)

A group's schedule that requires absence of more than 12 scholastic days should be adjusted so that no student is absent from campus more than 12 scholastic days. Students who previously have been warned in writing by their instructor about the impact of absences on their individual class performance should not incur additional absences, even if they have not been absent 12 scholastic days. The student is responsible to maintain satisfactory academic performance and attendance.

Late and Make Up Work Policy

Use the Canvas due dates to guide you. Your homework will be accepted up to 48 hours late, after which it is no longer accepted. There is a 20 percent (of 100 percent) penalty applied each day it is late. Examples: If your assignment is submitted 5 hours late, a 20 percent penalty is applied. If your assignment is 37 hours late, you will receive a 40 percent penalty. If an assignment is over 2 days (48 hours) late, it will no longer be accepted.

There are no make-up assignments for this course. Make-up exams are available only when the absence is confirmed through the DSO.

Technology in the Classroom

Calculators are not only not allowed, but generally unnecessary for this course.

Students with Learning Disabilities

Students requesting class and exam accommodations must first register with the Dean of Students Office Disability Resource Center (DRC), www.dso.ufl.edu/drc. That office will provide a documentation letter via email to your instructor. This must be done as early as possible in the semester, at least one week before the first exam, so there is adequate time to make proper accommodations. I am fairly familiar with the DRC accommodation process, so please reach out to me if you had any specific questions about this.